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ABSTRACT

This study investigated the directionality of the relationship between self-esteem and reading achievement in 286 students in Lynchburg, Virginia. During the first year of the three-year study, subjects were fourth, fifth, and sixth graders. The Coopersmith Self-Esteem Inventory and the SRA Achievement Series subscales were administered; sex and age variables were statistically controlled. Analysis of data revealed that self-esteem was predominant over reading comprehension both congruously and unidirectionally. Increases in self-esteem were found to be followed by increases in reading comprehension achievement, while decreases in self-esteem were followed by decreases in achievement. No pattern of predominance was revealed between self-esteem and vocabulary achievement or between self-esteem and spelling achievement. The implications of these findings suggest that an atmosphere which is conducive to the enhancement of self-esteem should be incorporated into the environment where learning is to occur. (KS)

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Self-Esteem and Reading Achievement

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A paper presented at the Annual Conference, American Educational Research Association, New York, April, 1977.

The study is based upon an unpublished doctoral dissertation: Self-esteem and reading achievement among upper elementary and junior high school students, University of Virginia (Sweet, 1976). Requests for reprints or inquiries should be sent to Anne E. Sweet who is now at the Administration Annex, Petersburg City Schools, Virginia 23803.

CS 003 370

Abstract

The directionality of the relationship between self-esteem and reading achievement was investigated. The Coopersmith Self-Esteem Inventory and SRA Achievement Series subscales were administered longitudinally to 286 fourth through eight grade students. Sex and age variables were statistically controlled and modified cross-lagged panel analyses were performed on three-wave, two-variable data. It was disclosed that self-esteem is predominant over reading comprehension congrously and unidirectionally. It was indicated that increases in self-esteem are followed by increases in reading comprehension achievement, and decreases in self-esteem are followed by decreases in reading comprehension achievement. No pattern of predominance was revealed singularly between self-esteem and vocabulary achievement, or between self-esteem and spelling achievement.

The role of self-concept in academic achievement has received voluminous support from research (Wattenberg & Clifford, 1964; Coopersmith, 1967; Henderson & Long, 1971). It is indicated by evidence accrued from recent research that students' failures in basic subjects, as well as the misdirected motivation and lack of commitment characteristic of the underachiever, the drop-out, and the socially disabled, are related directly to differences in perceptions of themselves and the world rather than to differences in basic capacity (Purkey, 1970).

Colemen (1966), in the landmark study Equality of Educational Opportunity in America, found that students' self-concept is among the three attitudinal variables that explain more of achievement variance than do any other set of nonintellective variables in the survey. Whereas it is apparent from this and related literature on the subject that self-concept is related to academic achievement, it is important to note that there is a lack of definitive research relevant to the directionality of the relationship between these variables. Does self-concept weigh more heavily upon academic achievement, or does academic achievement bear greater prevalence upon self-concept?

Many researchers have sought to attribute causality to the relationship between self-concept and academic achievement. Based upon the evidence accrued, however, this conclusion appears unwarrented. Calsyn (1973) attempted to unravel the pattern of causal predominance between general self-concept, academic self-concept, locus of control, and school achievement. Using a research design common to the one employed in the present study, four sets of panel data from separate

research projects were reanalyzed with the cross-lagged panel correlation technique (Campbell, 1963; Pelz & Andrews, 1964). Academic grade point average was found to be the independent variable and self-concept of school ability was found to be the dependent variable. The inference of causality as deduced in the Calsyn (1973) study may not be unequivocal because the possibility exists that an intervening variable, the presence of which remains to be identified, is related causally to one or both of the aforementioned variables (Sweet & Estes, 1977). Hence, the relationship between self-concept and academic achievement can be conceptualized more appropriately as directional in nature.

There remains much speculation as to the pattern of predominance between self-concept and academic achievement. As a result, school curricula differ in emphasis because varying degrees of predominance between these factors are assumed. The purpose of the study was to investigate the directionality of the relationship between self-concept and academic achievement. Self-concept is confined here to the evaluative dimension of self-esteem in which it is held that a person's perceptions of himself are derived largely from the reflected appraisal of others (Mead, 1934; Sullivan, 1953; Coopersmith, 1967). Academic achievement is confined here to achievement in reading. It is instructive to note that educators traditionally have considered achievement in reading to be the crucial criterion upon which the prediction of success in other academic areas is predicated.

Specifically, the study was conducted in order to ascertain whether or not a pattern of predominance exists between student self-esteem and reading comprehension, vocabulary, and spelling achievement, and to ascertain which condition bears greater prevalence.

Method

The method of analysis that was utilized to examine the directionality of the relationship between self-esteem and reading achievement is a modification of the cross-lagged panel technique (Campbell, 1963; Campbell & Stanley, 1963; Pelz & Andrews, 1964). In the traditional cross-lagged panel model, correlational data relating two variables at two points in time are utilized. The correlations, cross and lagged over time, are compared to discern the pattern of predominance between the variables. Restrictions on the general model have been identified independently (Yee & Gage, 1968; Rozelle & Campbell, 1969, Duncan, 1969). There are four competing hypotheses:

1. A is predominant over B congruously;
2. A is predominant over B incongruously;
3. B is predominant over A congruously; and
4. B is predominant over A incongruously.

Congruent effects of one of the two variables involved and incongruent effects of the other are not differentiated within the original cross-lagged panel model (Yee & Gage, 1968; Rozelle & Campbell, 1969). In addition, inferences will always be underdetermined by two-wave, two variable data (Duncan, 1969), thus restricting the identification of bidirectional relationships as well as congruent and incongruent relationships.

Operational alterations (Sandell, 1971) were adopted in order to expand the utility of the general model. The procedures were altered by taking measurements on both variables three times instead of twice, so as to obtain three-wave, two variable panel data as opposed to the two-wave, two variable data which are utilized in the original design (see Figure 1). Congruent and incongruent directional relationships as well as bidirectional relationships are identifiable when procedural alterations are adopted.

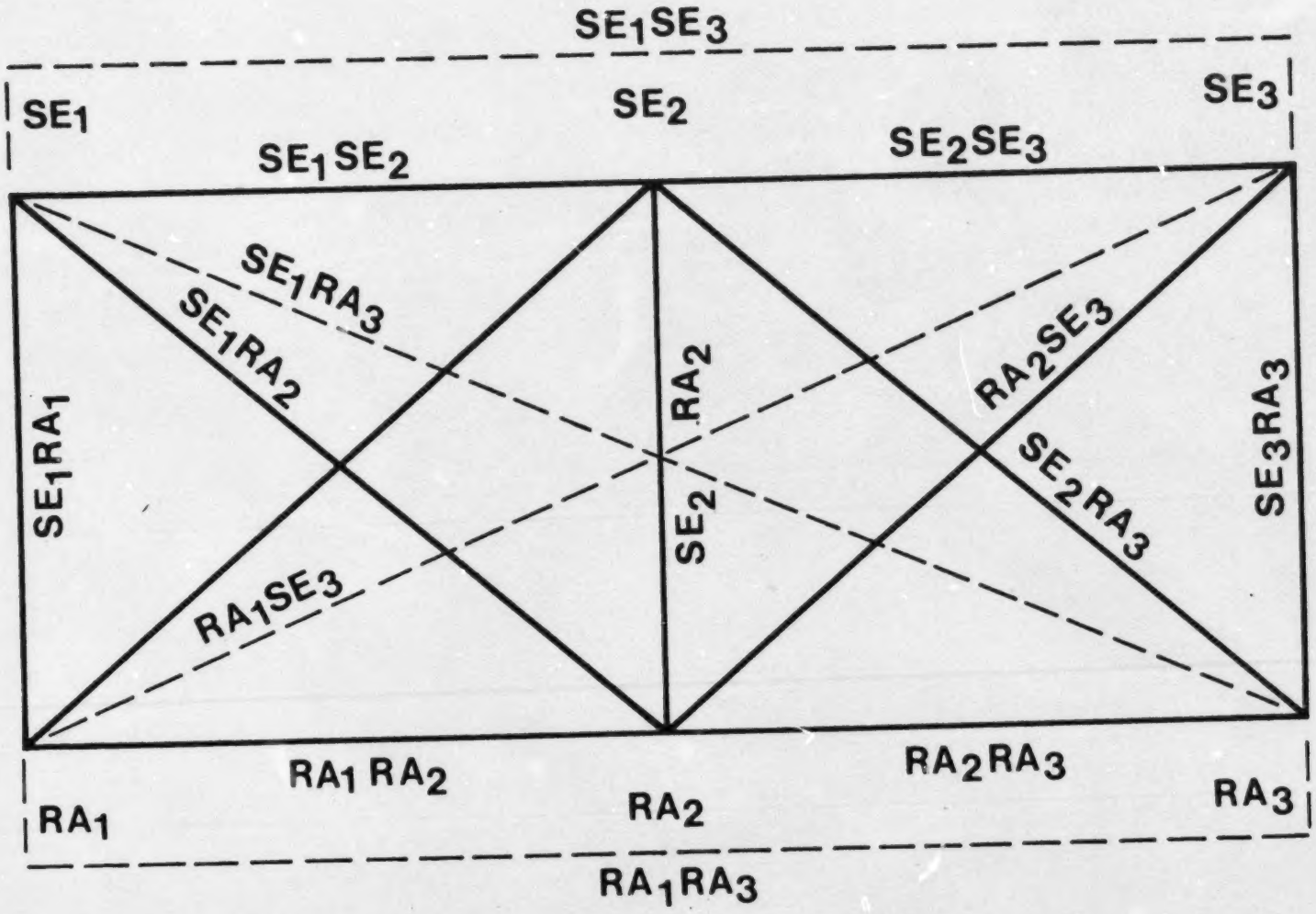
SE1SE3
SE1
SE2
SE3
SE1SE2
SE2SE3
SE1RA3
SE1RA2
SE1RA1
RA2
RA2SE3
SE2
SE2RA3
SE3RA3
RA1SE3
RA1 RA2
RA2RA3
RA1
RA2
RA3
RA1RA3

FIGURE 1

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Insert Figure 1 here

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Subjects. The subject sample consisted of 286 public school children drawn from a two-school population located in Lynchburg, a city in Central Virginia. During year one (1973), subjects were fourth, fifth, and sixth grade students; the same subjects became fifth, sixth, and seventh grade students for year two (1974) and subsequently became sixth, seventh, and eighth grade students for year three (1975) of data collection.

Instrumentation. The Self-Esteem Inventory (Coopersmith, 1967) was utilized in the study to measure self-esteem. The Self-Esteem Inventory is a self-report questionaire consisting of fifty-eight descriptive statements to which students respond "Like Me" or "Unlike Me" according to how each statement is perceived to describe personal feelings. The four areas of self-esteem focused upon in the Self-Esteem Inventory concern peers, parents, school, and personal interests. The SRA Achievement Series (1972), a multi-level edition of achievement tests for grades four through nine, was utilized in the study to measure achievement. Specifically, the reading (comprehension & vocabulary) and language arts (spelling) sub-scales from the SRA Achievement Series were used to measure achievement in reading.

Procedure

The data were collected longitudinally, at three different points in time over a three year period. The data for years one and two were collected by Lancaster (1974) in conjunction with the study Locus of Control and Achievement. The data for year three were collected by Sweet

(1976). Subjects were administered the Coopersmith Self-Esteem Inventory 1967) simultaneously with subscales of the SRA Achievement Series (1972) during the spring of 1973, 1974, and 1975.

Independent score values were yielded for the Self, Social, Home and School subscales of the Self-Esteem Inventory. In addition, a total score value, a representative composite of the subscale scores, was yielded. All reading achievement scores were in the form of grade equivalent. The SRA Achievement Series score values that were utilized were derived from the reading and language arts subscales and are as follow: Comprehension, Vocabulary, Reading Total, and Spelling.

Three sets of scores were correlated by the Pearson Product-Moment correlation coefficient. Because sex differences and age distinctions in the self-esteem-achievement relationship were discerned (Bledsoe,1967; Primavera, Simon & Primavera, 1974; Long, Henderson & Ziller, 1965, 1968), these variables were considered as potentially confounding and, thus, became subject to statistical control. Partial correlations were obtained by holding the sex and age variables constant. The crucial relationships, the cross-lagged second-order correlations, were compared by testing the significance of the difference between them using a two-tailed test.

These comparisons were made in accordance with Sandell's (1971) extended model of the Campbell and Stanley (1963) cross-lagged correlation method. Specifically, the relationships that were compared are as follow:

$r_{SE_1RA_2}$ and $r_{RA_1SE_2}$

$r_{SE_1RA_3}$ and $r_{SE_1RA_2}$

$r_{RA_1SE_3}$ and RA_1SE_2

The test of Pearson and Filon (1898; Peters & VanVoorhis, 1940, p. 185) was employed in this procedure.

Statistical analyses on the cross-lagged partial correlations were performed in two stages. During stage one, cross-correlations between years one and two were compared ($r_{SE_1 RA_2}$ and $r_{RA_1 SE_2}$) in order to abstract a pair of competing hypotheses. During stage two, the cross-correlations between years one and three were compared ($r_{SE_1 RA_3}$ and $r_{SE_1 RA_2}$) in order to isolate one of the rival hypotheses within the pair that was identified previously. At the same time, it became possible to discern whether or not the relationship between self-esteem and reading achievement was unidirectional or bidirectional in nature ($r_{RA_1 SE_3}$ and $r_{RA_1 SE_2}$ were compared).

Results

In Tables 1, 2 and 3, the cross-lagged partial correlations and the t ratios resulting from the statistical comparisons that were made between them, are presented. In Table 1, the cross-correlations between self-esteem during year one and reading achievement during year two ($r_{SE_1 RA_2}$) are given. In juxtaposition to these, are the cross-correlations between reading achievement during year one and self-esteem during year two ($r_{RA_1 SE_2}$). The differences between these sets of cross-lagged partial correlations are represented by the corresponding t ratios, of which -1.960 or higher are statistically significant at an alpha level of .05. The data arrangement in Tables 2 and 3, the cross-lagged data between years one and three, and years one and two, is analogous.

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Insert Tables 1, 2 and 3 here

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After an inspection of the data in Table 1, it was revealed that a consistent pattern of predominance emerged between self-esteem and reading achievement, even after the effects of sex and age had been controlled statistically. It was found during comparisons between the

Table 1

Cross-Lagged Partial Correlation Coefficients and t Ratios

	READING ACHIEVEMENT											
	Comprehension			Vocabulary			Reading Total			Spelling		
SELF-ESTEEM	SE_1RA_2	RA_1SE_2	t	SE_1RA_2	RA_1SE_2	t	SE_1RA_2	RA_1SE_2	t	SE_1RA_2	RA_1SE_2	t
Self	.2887	.1760	-1.9990**	.2097	.1790	- .4757	.2729	.1792	-1.7233*	.2582	.1529	-1.6990*
Social	.1489	.0978	- .8366	.1583	.0861	-1.0700	.1498	.0963	- .0962	.1697	.1122	- .8800
Home	.2359	.1396	-1.6721*	.1961	.1506	- .7006	.2187	.1425	-1.3758	.2239	.1615	-1.0005
School	.1887	.1443	- .6290	.1814	.1420	- .5351	.1768	.1521	- .3540	.2307	.1465	-1.1679
Total	.2874	.1837	-1.9055*	.2357	.1845	- .8144	.2722	.1874	-1.6281	.2826	.1804	-1.7044*

*p < .10
**p < .05

Table 2

Cross-Lagged Partial Correlation Coefficients and t Ratios

	READING ACHIEVEMENT											
	Comprehension			Vocabulary			Reading Total			Spelling		
SELF-ESTEEM	SE_1RA_3	SE_1RA_2	t	SE_1RA_3	SE_1RA_2	t	SE_1RA_3	SE_1RA_2	t	SE_1RA_3	SE_1RA_2	t
Self	.1604	.2887	2.2124**	.2490	.2097	-.6758	.1831	.2729	1.6386	.1969	.2582	1.0793
Social	.0417	.1489	1.7976*	.0564	.1583	1.7109*	.0488	.1498	1.7960*	.0938	.1697	1.3077
Home	.1419	.2359	1.6018	.1845	.1961	.1972	.1568	.2187	1.1161	.1631	.2239	1.0604
School	.1260	.1887	1.0593	.1767	.1814	.0797	.1396	.1768	.6659	.1632	.2307	1.1786
Total	.1578	.2874	2.2337**	.2304	.2357	.0910	.1782	.2722	1.7142*	.2027	.2826	1.4144

*p < .10
**p < .05

Table 3

Cross-Lagged Partial Correlation Coefficients and t Ratios

	READING ACHIEVEMENT											
	Comprehension			Vocabulary			Reading Total			Spelling		
SELF-ESTEEM	RA_1SE_3	RA_1SE_2	t	RA_1SE_3	RA_1SE_2	t	RA_1SE_3	RA_1SE_2	t	RA_1SE_3	RA_1SE_2	t
Self	.1735	.1760	.0506	.1644	.1790	.2953	.1782	.1792	.0203	.1380	.1529	.2998
Social	.0933	.0978	.0797	.0707	.0861	.2724	.0935	.0963	.0496	.0580	.1122	.9603
Home	.0777	.1396	1.0475	.0465	.1506	1.7635*	.0691	.1425	1.2423	.0299	.1615	2.2334**
School	.2214	.1443	-1.2564	.2084	.1420	-1.0796	.2236	.1521	-1.1663	.2567	.1465	-1.8078*
Total	.1842	.1837	- .0100	.1634	.1845	.4207	.1849	.1874	.0500	.1555	.1804	.4959

*p < .10
**p < .05

cross-correlations SE_1RA_2 and RA_1SE_2 that $r_{SE_1RA_2} > r_{RA_1SE_2}$. This directional pattern was evidenced throughout; however, a level of significance was reached for only an approximate one-third of the statistical comparisons that were made between the cross-correlations SE_1RA_2 and RA_1SE_2. The cross-correlational comparisons in which a level of significance was reached are as follow: (*p < .10; **p < .05)

r_{SE}	and	RA	
Self	and	Comprehension	**
Home	and	Comprehension	*
SE Total	and	Comprehension	*
Self	and	Reading Total	*
Self	and	Spelling	*
SE Total	and	Spelling	*

Thus, stage one of the analyses was completed. A pair of competing hypotheses was abstracted by examining the cross-correlations between years one and two. Because $r_{SE_1RA_2}$ is greater than $r_{RA_1SE_2}$, either self-esteem is predominant over reading achievement congruously, or reading achievement is predominant over self-esteem incongruously, more than the other way around (Rozelle & Campbell, 1969).

After an inspection of the data in Table 2, it was revealed that $r_{SE_1RA_3}$ is less than $r_{SE_1RA_2}$. This directional pattern was evidenced throughout; however, a level of significance was reached for only an approximate one-third of the statistical comparisons that were made between the cross-correlations SE_1RA_3 and SE_1RA_2. The cross-correlational comparisons in which a level of significance was reached are as follow: (*p < .10; ** p < .05)

r_{SE}	and	RA	
Self	and	Comprehension	**
Social	and	Comprehension	*
SE Total	and	Comprehension	**
Social	and	Vocabulary	*
Social	and	Reading Total	*
SE Total	and	Reading Total	*

During stage two of the statistical analyses, one of the competing hypotheses identified in stage one was isolated by examining the cross-correlations between years one and three, and years one and two. It was revealed that $^{r}SE_1RA_3 < {}^{r}SE_1RA_2$. Therefore, self-esteem is predominant over reading achievement congruously because $^{r}SE_1RA_3$ is less than $^{r}SE_1RA_2$ (Sandell, 1971).

Stage two of the analyses was continued in order to distinguish between unidirectionality and bidirectionality. After an inspection of the data in Table 3, it was apparent that $^{r}RA_1SE_3$ is not markedly different from $^{r}RA_1SE_2$. That is, a level of significance was reached for only three of the twenty statistical comparisons that were made between the cross-correlations RA_1SE_3 and RA_1SE_2. The cross-correlational comparisons in which a level of significance was reached are as follow: (*p < .10; **p < .05)

^{r}RA		SE
Vocabulary	and	Home *
Spelling	and	Home **
Spelling	and	School *

The directional patterns of these cross-correlations are inconsistent and are only three in number. Neither of the hypotheses concerning the bidirectionality of the self-esteem-reading achievement relationship was substantiated satisfactorily by the findings. The remaining hypothesis, that the relationship is unidirectional, was abstracted for consideration.

It was observed previously that $^{r}RA_1SE_3$ is not markedly different from $^{r}RA_1SE_2$ (see Table 3). By raw comparison, it was evident that the average differences between $^{r}SE_1RA_2$ and $^{r}RA_1SE_2$ (.0666), and, $^{r}SE_1RA_3$ and $^{r}SE_1RA_2$ (-.0670) are not very different from one another in terms of magnitude. At the same time, these average differences appear to be much larger than the average difference between $^{r}RA_1SE_3$ and $^{r}RA_1SE_2$ (-.0025).

All cross-lagged partial correlation coefficients, except those which were computed from SE Total and Reading Total, were converted to z scores and cross-correlational differences were calculated. It was ascertained through standard independent *t* comparisons that although the average differences between $^{r}SE_1RA_2$ and $^{r}RA_1SE_2$, and, $^{r}SE_1RA_3$ and $^{r}SE_1RA_2$ do not differ significantly from one another, the average differences between $^{r}SE_1RA_2$ and $^{r}RA_1SE_2$, and, $^{r}RA_1SE_3$ and $^{r}RA_1SE_2$ do differ significantly from one another. It was found also that the average differences between $^{r}SE_1RA_3$ and $^{r}SE_1RA_2$, and, $^{r}RA_1SE_3$ and $^{r}RA_1SE_2$ differ significantly from one another. The results of student's independent *t* tests are reported in Table 4. A critical ratio of 1.717 or greater is indicative of a significant difference at an alpha level of .05 with twenty-two degrees of freedom.

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Insert Table 4 here

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Thus, the differences that were detected between the cross-correlational comparisons of $^{r}RA_1SE_3$ and $^{r}RA_1SE_2$ were regarded as negligible relative to the differences that were disclosed between the cross-correlational comparisons of $^{r}SE_1RA_2$ and $^{r}RA_1SE_2$, and, $^{r}SE_1RA_3$ and $^{r}SE_1RA_2$. These negligible differences, therefore, were attributed to error, the intervention of an unidentified third variable, or a combination of these events. Because no substantial evidence was uncovered to support either of the inequalities $^{r}RA_1SE_3$ is less than $^{r}RA_1SE_2$ or, $^{r}RA_1SE_3$ is greater than $^{r}RA_1SE_2$, the remaining equality was accepted. That is, the difference between $^{r}RA_1SE_3$ and $^{r}RA_1SE_2$ is equal to zero.

Table 4

Average Cross-Lagged Correlational Differences and $\underline{t}$ Ratios

$(SE_1RA_2 - RA_1SE_2)$	$(SE_1RA_3 - SE_1RA_2)$	$\underline{t}$
.0691	.0566	1.025
$(SE_1RA_2 - RA_1SE_2)$	$(RA_1SE_3 - RA_1SE_2)$	$\underline{t}$
.0691	.0122	2.845*
$(SE_1RA_3 - SE_1RA_2)$	$(RA_1SE_3 - RA_1SE_2)$	$\underline{t}$
.0566	.0122	1.889*

*$p < .05$

Table 5

Summary of Interpretations of Three-Wave Panel Cross-Lagged Correlations, in the Case Where $r_{SE_1RA_2} > r_{RA_1SE_2}$, $r_{SE_1RA_3} < r_{SE_1RA_2}$, and $r_{RA_1SE_3} = r_{RA_1SE_2}$

$(r_{RA_1SE_3} - r_{RA_1SE_2})$	$(r_{SE_1RA_3} - r_{SE_1RA_2})$
	< 0
$= 0$	Congruous unidirectional $SE\pm \rightarrow RA\pm$

Stage two of the statistical analyses was commenced by deriving the conclusion that $^{r}RA_1SE_3$ is equal to $^{r}RA_1SE_2$. Because $^{r}SE_1RA_2$ is greater than $^{r}RA_1SE_2$, and, $^{r}SE_1RA_3$ is less than $^{r}SE_1RA_2$, a congruous unidirectional relationship was indicated by the acceptance that $^{r}RA_1SE_3$ is equal to $^{r}RA_1SE_2$ (Sandell, 1971). A summary of findings and interpretations is depicted in Table 5.

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Insert Table 5 here

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Discussion

Within the constraints of the cross-lagged panel theoretical model that was utilized in this study, the conclusion was derived that whatever causation may exist between self-esteem and reading achievement is in the direction of self-esteem influencing reading achievement, and not in the direction of reading achievement influencing self-esteem.

With respect to the individual patterns of predominance that emerged between self-esteem and reading achievement, a final but delimiting conclusion was derived. The differences between all of the cross-correlations of self-esteem subscales with reading achievement subscales were found to have occurred in a directionally consistent mode. Clearly, all of the self-esteem subscales appeared to approach a state of predominance with the reading achievement subscales when comparisons were made between $^{r}SE_1RA_2$ and $^{r}RA_1SE_2$, and, $^{r}SE_1RA_3$ and $^{r}SE_1RA_2$. The only cross-correlations, however, in which a level of significance was reached during comparisons between $^{r}SE_1RA_2$ and $^{r}RA_1SE_2$, and, $^{r}SE_1RA_3$ and $^{r}SE_1RA_2$ were those between the Self and SE Total subscales of the Self-Esteem Inventory and the Reading Comprehension subscale of the SRA Achievement Series.

A qualifying conclusion was drawn, therefore, with respect to the pattern of predominance that was found to exist between self-esteem and reading achievement. Specifically, a pattern of predominance was found to exist between self-esteem and reading comprehension. It was concluded that whatever causation may exist between self-esteem and reading comprehension is in the direction of self-esteem influencing reading comprehension, and not in the direction of reading comprehension influencing self-esteem. No pattern of predominance was disclosed singularly between self-esteem and vocabulary achievement. No pattern of predominance was revealed singularly between self-esteem and spelling achievement.

These findings are contrary to those of Calsyn (1973) wherein it was determined that grade-point average is predominant over academic self-concept. According to conventional measurement, academic self-concept is a dimension of self-evaluation which is restricted to feelings of competence specific to the realm of academic achievement. Calsyn found also that no pattern of predominance exists between general self-concept and grade-point average. This later result may be more pertinent to the present study because general self-concept encompasses the evaluative component of self-esteem, and for purposes of comparison, general self-concept may be considered analogous to self-esteem. Two-wave, two-variable data were utilized in the Calsyn (1973) study, whereas, three-wave, two-variable data were utilized in this study. Duncan (1969) noted that inferences will always be underdetermined by two-wave, two-variable data.

This study was viewed as occupying an intermediary position between the standard correlational and the experimental type of research. A direction for future experimental investigations was identified. It was recommeded that because self-esteem was found to be predominant over reading comprehension achievement congruously and unidirectionally, experimental research of

an extended longitudinal nature should be conducted wherein self-esteem is treated as the independent variable, and achievement is treated as the dependent variable.

Educational implications became evident. It was inferred from the findings of the study that the attainment of a satisfactory level of self-esteem is prerequisite, perhaps, to achievement in reading comprehension. It was indicated that increases in the level of self-esteem are followed by increases in reading comprehension achievement. Conversely, it was indicated that decreases in the level of self-esteem are followed by decreases in reading comprehension achievement.

That increases and decreases in reading comprehension achievement are affected possibly by increases and decreases in the level of self-esteem bears direct relevance to instructional practices. The implication was derived that an atmosphere which is conducive to self-esteem enhancement should be incorporated into the environment wherein learning is to occur. In sum, the student who has developed feelings of self-worth is amenable to reading instruction. Strategies in which self-esteem is enhanced directly by engaging the student as an active participant in the learning process appeared to be desirable.

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